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TASK CHARACTERISTICS, ORGANIZATIONAL RESPONSES AND EXPERIENCED ROLE STRESS

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Abstract

Based on the view of organizations as complex webs of interdependencies, several possible sources of role stress are investigated. Dependent measures of role stress include role conflict, role ambiguity, role overload, and role fairness. Task characteristics (workflow centrality, interdependence, task feedback, and task autonomy) were analyzed as determinants of role stress, mediated by organizational responses (centralization, formalization, influence, and contacts) and supervisor behavior (feedback and goal clarification). Differential patterns of role stress were observed for different type employees (managers, professionals, and technicians). Analyses focussed on task characteristics and organizational responses reported by one type employee and the consequent effects of these variables on the role stress experienced by the other groups of employees. Substantial amounts of variance in role stress was explained for professionals and technicians. Results also indicate that factors increasing role stress for one type employee can even decrease role stress experienced by other types of employees. Results are discussed in terms of the organic versus mechanistic nature of organizations.

Beginning with the early studies of Gross et al. (1958) and Kahn et al. (1964), the determinants and consequences of role conflict and ambiguity have received considerable attention. Role stress, such as ambiguous or conflicting expectations, role overload, or feelings that role expectations are unfair, has been shown to be associated with a variety of dysfunctional consequences: low performance and satisfaction, and high anxiety, tension, and inclination to leave the organization (Kahn et al., 1964; House & Rizzo, 1972; Miles, 1976).

A variety of sources or determinants of role stress have also been suggested and/or investigated. These studies have looked at relationships between role stress and characteristics of tasks or role requirements such as integration and boundary spanning activities (Kahn et al., 1964; Miles, 1976; Miles & Perreault, 1976), task autonomy and task feedback (Keller et al., 1976; Schuler, 1977), and the position of the role receiver in the organizational workflow (Miles, 1977). Others have focused upon supervisory behavior, such as supportive leadership style (House & Rizzo, 1972) and personnel supervision activities (Miles & Perreault, 1976). Organizational structural attributes, such as formalization (House & Rizzo, 1972), inter- and intra-organizational contacts (Rogers & Molnar, 1976), and influence (Tosi & Tosi, 1970; Rizzo, House, & Lirtzman, 1970) have also been investigated in relation to role stress. Schuler (1977) studied the degree of congruence between organizational structure and task characteristics and the impact of incongruence upon role stress.

Many of the previous role stress studies, however, have used same-source data; independent measures of role stress and its consequences and/or determinants have not generally been available. As Kahn et al. (1964, p. 36)

argue, same-source data may readily confound the results. The focal person's "perceptions are affected by the state of his interpersonal relations with role senders and by aspects of his own personality. Indeed, . . . some of his major defenses against a difficult situation will involve perceptual distortion." Feeling stress, for example, could plausibly cause employees to make negative attributions about their supervisors' behaviors, or feel less influential over their own work activities. With notable exceptions, (Gross et al., 1958; Kahn et al., 1964), studies of role stress have not employed methods which allow for independently measuring stress and its hypothesized determinants.

In connection with the avoidance of the use of same-source data, the present study attempts to extend previous role stress investigations by including a consideration of factors which are not directly evident to the receiver of role expectations. Previous studies have primarily focused upon the role sender-receiver link, or upon factors directly impinging upon the role receiver. The present study, however, documents the impact of task characteristics and structural attributes reported by role senders on stress experienced by role receivers. For example, while previous studies have identified task characteristics of role receivers as sources of role stress, the present study will consider the effects of task characteristics of role senders upon role stress experienced by role receivers. The impetus to investigate such effects is based upon the notion that organizations are often composed of complex webs of interdependencies. Factors impinging at one point in the organization may have significant effects upon individuals at other points in the organization. As interdependencies

among individuals increase, such effects are likely to become more and more important.

The present study recognizes the possibility that different sources of role stress may be associated with different functional activities. As Miles (1976) has pointed out, persons performing different functional roles may experience different sources and types of role stress. For example, the sources of role ambiguity for managers may be quite different than the sources of role ambiguity for their subordinates. Furthermore, to the extent that individuals performing differentiated role requirements, or occupying differentiated positions, are interdependent, factors and/or behaviors which reduce role stress for one employee may even increase role stress for another. The research presented in this paper has been designed to identify determinants of role stress for different types of employees (managers, professionals, and technicians). It specifically attempts to identify the conditions prevailing for one type of function which are associated with role stress for persons occupying different functional positions.

A general model suggesting relationship among task characteristics, organizational structure and supervisory behavior, and role stress is presented in Figure 1. While this general model provides a guide for identifying relevant factors, it does not presume to make specific predictions. The empirical analyses likewise resemble a broad search rather than a sharply focussed inquiry. The study is intended to be hypothesis-generating rather than hypothesis-testing.

Insert Figure 1 about here

Included in this general model as dependent variables are four dimensions of role stress: (1) role ambiguity--the extent to which employees do not clearly know or understand what is expected of them on their jobs; (2) role conflict--the extent to which employees feel that the demands or expectations made upon them are incompatible or incongruent; (3) role overload--the extent to which employees feel that the various role expectations and demands placed upon them exceed the amount of time and resources available for their completion; and (4) role fairness--the extent to which employees feel that the role expectations placed upon them are fair and equitable.

Included in the model as possible determinants or sources of role stress are the following task characteristics:

Workflow Centrality: the extent to which an employee's work group is a focal point in the workflow. This variable reflects the ratio of the number of reciprocal interdependencies of a focal department with other departments within a unit to the total number of possible reciprocal interdependencies within the unit.

Internal Interdependencies: the extent to which employees are reciprocally interdependent with others within their own departments.

External Interdependencies: the extent to which employees are reciprocally interdependent with others outside their own departments or units.

Task Feedback: the extent to which the task itself provides feedback to employees concerning how well they are performing their tasks.

Task Autonomy: the extent to which the task allows employees freedom and discretion in how they go about performing their work.

These task characteristics are viewed as independent variables which may possibly affect the amount of role stress experienced by managers, professionals, or technicians. However, as suggested by the work of House and Rizzo (1972) and Schuler (1977), their effects may be moderated by organizational responses such as the structure of the organization and the behavior of supervisors. In addition to acting as moderating variables, these organizational responses may also have direct effects upon experienced role stress. Included in the model presented in Figure 1 are the following organizational structure and supervisory behavior variables:

Centralization of Decision-making: degree to which discretion over the department's work activities is exercised at high levels in the formal hierarchy.

Formalization of Procedures: the extent to which there are written rules or regulations regarding the performance and scheduling of work activities.

Distribution of Influence: the degree to which employees have a say in decisions concerning their day-to-day work activities.

Interdepartmental Contacts: the extent to which employees have contacts with other departments within their unit.

Supervisor Goal-clarifying Activities: the extent to which employees' supervisors make goals clear and understandable.

Supervisor Feedback: the extent to which supervisors give subordinates feedback concerning how well they are performing their jobs.

The variables chosen for inclusion in the general model were selected because of their similarity to measures used in previous role stress

studies. It was felt that they represented the type of broad sample necessary for a fairly comprehensive hypothesis-generating investigation.

METHOD

Sample and Site

The general model presented in Figure 1 was assessed using data gathered from 655 employees of two engineering divisions of a large public utility. One division, which designs power lines, power line carriers, and related equipment, contains five units which are further subdivided into a total of 33 departments. The other division designs power plants and associated structures. It is divided into several units, two of which were included in this study. These two units contain 22 departments.

This organization was selected for study because it provided considerable variance on many of the variables previously noted. For example, one department which simulates system breakdowns had been working relatively isolated from other departments and had relatively few direct interdependencies. At the other extreme, a department within the power plant division was working directly with other departments on designing water power stations, while, at the same time, working directly with still other departments on designing switchyards. In addition, this department was involved with a third set of outside departments in designing control instruments for nuclear plants. In this and other such departments, interdependencies across units and departments were often as crucial as interdependencies within their own department. In fact, three years prior to this study, the power plant division had adopted a quasi-matrix form of organization in order to more efficiently manage these inter-unit and inter-departmental interdependencies.

Within the organization, there was also an unofficial but pervasive policy of resolving problems at the lowest possible level. Yet, at least one unit chief insisted on involving himself in even the most mundane department activities. In addition, there was also a frequently voiced distinction between managing and engineering. Department managers, department supervisors, and unit chiefs were invariably engineers who had been promoted into management positions. They often retained their interest and involvement in engineering despite the frequently stated conviction that "engineering work should be left to the engineers". This problem and the issue of where in the organization decisions should be made suggested that centralization and distribution of influence might be important considerations in investigating role stress.

Other departments within the organization, such as the mapping department which worked almost exclusively in the field, had considerable task autonomy, while, at the same time, remaining interdependent with departments located at headquarters. The site, therefore, afforded an opportunity to distinguish the effects of interdependence from those of task autonomy. In addition, some departments made extensive use of computer based information systems, while others did not, thereby providing a considerable variation in the degree of formalization of procedures.

The organization also provided an opportunity for independently assessing the role stress model for different functional roles within the two divisions. Three different functional roles were easily distinguishable by both outside researchers and those working within the organization. The sample was composed of managers, professionals, and technicians. Managers included department supervisors, squad leaders, and assistant

department supervisors who were responsible for assigning jobs and monitoring and coordinating performance. Professionals included engineers, mathematicians, architects, and technical report writers. They were responsible for formulating the designs. The technicians (draftsmen, engineering aids and engineering associates) served primarily as assistants to the professionals, carrying out the more routine work once the designs had been formulated.

Overall, the public utility had many of the organizational characteristics described by Burns and Stalker (1961) as "organic". The divisions studied were engaged in complex tasks requiring a considerable degree of horizontal communication both within and across departments and units. These complex interdependencies often placed considerable strains upon coordination, and required a great deal of decision making at lower levels in the hierarchy. The burden of production rested largely with professional and technical personnel with managers largely responsible for information processing.

Measures

Most of the measures of variables contained in the study were obtained via questionnaires; however, the indices of workflow centrality and centralization of decision making were constructed from interview data. Interviews were conducted with representatives, usually the supervisor, from each of fifty-five departments, thirty-three in the division designing power line carriers and twenty-two in the division designing power plants.

In order to assess workflow centrality, respondents were asked to describe their functional interdependencies with other departments in their unit and with other units in their division. They were also asked to rate these interdependencies on a seven-point scale on the basis of (1) the degree to which their own department depended upon each other department (or unit) and (2) the degree to which each other department (or unit) depended upon their own department. Through this method, each interdependence relationship was assessed from the perspective of representatives from both departments involved. When both representatives agreed upon the nature and direction of the interdependence (a rating of three or greater on the seven-point scale was taken to be significant), the link was identified and charted on a workflow diagram. The result was a series of diagrams portraying workflow interdependencies among departments within the same unit, and among departments and units other than their own.

To construct the workflow centrality index, the number of other departments within the unit which were dependent upon the focal department was divided by the total number of possible dependencies (the number of other departments in the unit minus 1). This quotient was then multiplied by the average intensity of the dependencies. This procedure was also performed on the number of other departments upon which the focal unit was dependent. The two products were then multiplied to produce an overall score reflecting the department's workflow centrality within the unit--the extent to which the focal department simultaneously depended upon other departments within the unit, and was depended upon by other departments

within the unit. A similar procedure was employed to create an overall index of department workflow centrality across units.

In addition to workflow centrality, interview data was used to assess centralization of decision makming. Respondents were asked to rate on a seven-point scale the extent to which decisions concerning (1) how work related problems are solved in the department, (2) what people in the department do day-to-day, and (3) changing how people in the department do their work were made by incumbents to different positions in the division. The positions included unit chief, department supervisor, and senior engineer.

Two indices of centralization were constructed using the department as the unit of analysis. The first measure (CENT1) was an index of the extent to which influence was exercised at the level of the department supervisor and not at the level of the unit chief. To form this index, the linear combination of the three interview measures of unit chief influence was reversed and multiplied by the linear combination of the three interview measures of department supervisor influence.

A similar procedure was used to construct the second centralization index (CENT2)--the extent of influence exercised by senior engineers and not exercised by the department supervisor. In this case, the department supervisor combination was reversed and multiplied by the linear combination of the interview measures for senior engineer influence.

Measures for all other variables in the general model were taken from questionnaire items developed for the Michigan Organizational Assessment Package (Seashore & Mirvis, 1978). The questionnaire items and associated variables are presented in Appendix 1. With the exception of the

interdependence measures, all multiple measures of each variable were averaged to form indices of the construct they were designed to measure.

The interdependence measures were multiplied to form indices of reciprocal interdependence. This was done because it was felt that employees being simultaneously dependent upon and depended upon by others represented greater interdependence that would be tapped by a simple linear combination of the questionnaire items. Separate measures were constructed for intra-department interdependence (item #1 x item #2 in Appendix 1), inter-department interdependence (item #3 x item #5), and inter-unit interdependence (item #4 x item #6).

The means, standard deviations, and average inter-item correlations for the multi-item indices are presented in Table 1. In addition to the variables stated in the general model, a measure of the extent to which employees felt they received performance feedback from co-workers was introduced as a control for the hypothesized relationship between supervisor feedback and role stress (item #36, Appendix 1).

Insert Table 1 about here

To avoid the potential measurement error inherent in using same source data, scores from indices derived from questionnaire measures were aggregated to the level of the department, and different averages were calculated for each of the three types of personnel (managers, professionals, and technicians). By aggregating within job classification and by department, independent department level measures were obtained for each variable in the general model.

Forty-seven of the 55 departments had persons in the official position of department supervisor. To maximize consistency in who was being referred to in the measures of supervisory behavior, it was decided to limit analyses to these forty-seven departments. Of these, 37 departments had technical personnel, and 46 were represented in the data set by professional personnel. Analyses, therefore, are based upon varying N's.

Correlations between Measures by Respondent Types. Separating measures according to respondent type was supported by an examination of the correlations between measures. As expected, few significant correlations were noted between measures for managers, professionals, and technicians when compared by departments. For example, departments in which managers felt role conflict were not necessarily the same departments where professionals felt role conflict ($r=.25$), or where technicians felt role conflict ($r=.19$). Nor were the task characteristics or organizational responses reported by one group within a department highly correlated with the reports of the other groups within that department. The highest correlation between identical measures for any two groups within the same department was .36.

Correlations between measures were also performed across departments for each respondent type. Correlations between measures of task characteristics, organizational responses, and role stress dimensions are presented separately for each respondent type in Appendices 2, 3, and 4, respectively. While some of the different measures are highly correlated, generally they reflect moderate degrees of association and do not preclude discrimination among the different variables.

The data presented in these appendices indicate different patterns of relationships for the different respondent types. For example, workflow centrality across departments is positively and significantly associated with internal and external interdependencies as well as task feedback for managers. However, the only significant correlation between these variables for professionals is a negative relationship between workflow centrality and internal interdependence. Technicians report no significant correlations between workflow centrality and any of the other task characteristic variables. While technicians report significant correlations between centralization (CENT1) and the measures of supervisor goal clarifying behavior and feedback from supervisors and co-workers, managers and professionals did not show similar patterns.

It is noteworthy that external interdependencies as well as both measures of workflow centrality are positively related to task feedback for managers. Managers with more external linkages may be better able to see how their work articulates with that of others. Interestingly, task autonomy for managers is not associated with other task characteristics. One might have expected a significant negative correlation between autonomy and the measures of interdependence. However, managers who have a great deal of freedom on their jobs may acquire this freedom precisely because they are highly interdependent with others. As Emerson (1962) has suggested, leverage or power may be obtained via such interdependencies.

Not surprisingly, the data in Appendix 4 indicates that role fairness is negatively correlated with role conflict, ambiguity, and overload for all three type respondents. Role ambiguity and role conflict are also

significantly related for managers, professionals, and technicans. However, role overload is not highly correlated with role ambiguity for any group, and only managers report a significant association between role overload and role conflict.

RESULTS

Overall, the lack of agreement among managers, professionals, and technicians within the same departments, and the differences in response patterns among the three groups supports the separation of measures by respondent type in the analyses. Differences in respondents' positions were further reflected in their levels of experienced role stress. Professionals had more role ambiguity than technicians ($F=3.69$, $p=.05$) and tended to have more ambiguity than managers ($F=2.25$, $p=.13$). They reported significantly more role conflict than managers ($F=5.56$, $p=.02$) and technicians ($F=5.18$, $p=.02$). Managers, on the other hand, felt greater role overload than professionals ($F=18.51$, $p<.01$) or technicians ($F=40.43$; $p<.01$) and professionals experienced more overload then technicians ($F=9.46$; $p<.9$). There were no significant differences among job categories on role fairness.

By aggregating scores within job classification and by department, it was possible to obtain correlations between role stress measures as perceived by one group (i.e., professionals) and perceptions of task characteristics and organizational responses by the other two groups (i.e., managers and technicians). The relatively small number of cases precluded a complete simultaneous assessment of the general model presented in Figure 1. Instead, the role stress measures for each group were first

regressed upon task characteristics, and secondly, upon organizational response variables. Finally, the role stress measures were regressed upon those task characteristic and organization response variables which appeared significant in the first two regressions. All same-source data were was omitted in these regressions.

Initial Investigation of General Model

Tables 2, 3, and 4 present stepwise regressions of managers', professionals', and technicians' experienced role stress on the task characteristic and organization response variables. These were performed as an initial investigation of the general model. The regression procedure initially selected only those independent variables which exhibited a relationship with the role stress measures at the $p \leq .10$ level. As additional independent variables were selected for entry into the regression equation, those variables which did not retain a $p \leq .15$ level of significance were dropped. Consequently, a combination of independent variables, all of which retained regression coefficients significant at the minimal $p \leq .15$ level, are presented in Tables 2, 3, and 4.

Sources of Role Stress for Managers. The general lack of significant coefficients in Table 2 indicates that neither professionals' nor technicians' perceptions of task characteristics or organizational responses had any noticeable effect on managers' levels of role stress. The single exception is professionals' interdependencies within their own departments. Even here the effect is small, accounting for only 13% of the managers' role conflict.

Insert Table 2 about here

However, workflow centrality among departments, a measure constructed from interview data, seems to increase feelings of role fairness and decrease feelings of role overload for managers. As was pointed out previously, managers in the two divisions studied serve as information links between their own departments and other departments and units. The findings in Table 2 suggest that managers located in departments central to the workflow may find this linking function easier to perform, at least in the sense that they do not feel overloaded. As Sieber (1974) has argued, the number of linkages one has may in part determine the amount of information, leverage, etc., that one can obtain. Being in a department central to the workflow among departments, that is, having many functional links with other departments, may provide managers with such benefits.

Sources of Role Stress for Professionals. In contrast to the findings for managers, task characteristics, and organizational responses to a lesser extent, have a substantial impact upon professionals' feelings of role stress. From 37 to 48 percent of the variance for professionals is accounted for by task measures. Of particular interest in Table 3 are the findings that workflow centrality among departments increases role conflict for professionals. Workflow centrality, however, decreased managers' feelings of role overload. We therefore find that the same task characteristic may have a positive impact upon role stress for one group of employees and a negative impact on another group. This is similar to Miles' (1977) finding that the number of organizational boundaries traversed to reach ones' role set was positively associated with role

conflict for internal, regular staff, but negatively associated with conflict for boundary spanners.

Insert Table 3 about here

Data reported in Appendix 2 indicates that workflow centrality was not significantly associated with professionals' reports of interdependence across departments or units. It is particularly interesting, then, that it is the centrality of the department rather than their own interdependencies which seem to lead to role conflict for professionals. It seems that professional personnel must respond to demands for coordination that press upon the department, and that these demands affect experienced role conflict.

Also apparent from Table 3 is the consistent, significant impact of managers' task feedback upon all dimensions of professionals' role stress. To the extent that a manager himself can tell how well he is performing simply by doing his job, a professional in that manager's department feels less role ambiguity, conflict, and overload, and a greater sense of role fairness. As previously noted (Appendix 2), managers' task feedback is positively associated with being in a department central to the workflow and having reciprocal interdependencies with others outside their departments. Managers who have extensive dealings outside their own departments may get a better perspective on how well they are directing their employees. This perspective may place them in a better position to set realistic goals for professionals and to direct employees in ways which are compatible with activities going on in other departments. The managers may also have a better idea of and be more able to adjust to

changes in the magnitude of the tasks they assign professionals. This might therefore lead to professionals feeling less role stress and that their role demands are equitable.

However, professionals in departments in which the managers have important external interdependencies across departments experience greater role ambiguity and decreased role fairness. While the association between external interdependencies and task feedback for managers was noted, to the extent that this relationship does not occur (or is controlled for as in this analysis), managerial interdependencies outside their own departments do not have a positive impact on professionals' levels of role ambiguity and fairness. Unless managers obtain useful information concerning their own performance, those who become functionally linked to outside departments may only add to confusion and ambiguity for the professionals they supervise.

Professionals in departments where technical personnel have many functional interdependencies outside their departments tend to feel greater role overload. Because part of the professionals' role responsibilities include directing the work of the technicians, it is not surprising that the demands on the professionals' jobs are greater when those they oversee have links to outsiders which must be taken into account.

Although professionals' feelings of role stress are less strongly associated with organizational response measures than with task variables, managers' perceptions of organizational responses do have an effect. Specifically, managers who feel they are influential in making everyday decisions about how the work should be done seem to increase professionals'

role conflict and overload. This finding seems to confirm the appropriateness of the organizational prescription that engineering should be left to the engineers.

Managers who report being able to obtain feedback from their own supervisors are able to reduce their professional subordinates' role ambiguity and to increase the extent to which these subordinates feel that the demands made of them are fair. In connection with the relationship between managers' task feedback and professionals' role stress, it would seem that managers' feedback, whether from their own supervisors or from the task itself, has a positive effect on professionals' role stress.

Professionals in departments where technicans feel influential report lower levels of role conflict. This may be due to the increased flexibility that such influence affords. When technicians have a say in determining how their work should be done, they may be less prone to argue with professionals and thereby place the professionals in stressful situations. This relationship, however, does not seem to operate between managers' experienced role conflict and professional's influence.

Finally, professionals in departments where supervisors provide technicians with performance feedback report a lessened sense of role fairness. It may be that professionals, who direct technicians but also have the same department supervisors, resent the managers providing the technicians with feedback. This hypothesis, however, must remain speculative.

Sources of Role Stress for Technicians. The most notable feature of the data presented in Table 4 is that increased formalization of procedures, as managers view it, has a positive association with technicians'

perceived role stress. While employees who feel that their own jobs are highly formalized may experience less role stress, as reported elsewhere (House & Rizzo, 1972), supervisors' perceptions of high formalization increase the role stress of their subordinates. When their managers' jobs are highly formalized, technicians may be told one thing "by the book", and quite another by those they work with who feel that the formal prescriptions are inadequate. Managers, who might be more flexible were their activities less circumscribed, may feel obliged to follow regulations even if they are suboptimal or even overtly inappropriate. Although speculative, this could lead technicians to be confused about what is expected of them, to experience conflicting demands (possibly from their professional supervisors), to feel that the demands are unfair, and to feel overloaded given that informal but more effective means of functioning may be available.

Insert Table 4 about here

It is interesting to note that professionals' perceptions of formalization do not have the same negative effects upon technicians' role stress. As previously noted, both managers and professionals act as supervisors and role senders for technicians. One might expect that professionals, who are more directly involved in the work of the technicians, may be better able to supervise the technicians than department managers. Several other findings reported in Table 4 support this notion.

For example, technicians report higher levels of role conflict when managers are highly interdependent within their departments. It is possible that these managers attempt to impose their direction on employees

who could perhaps more efficiently take their cues from professional staff. On the other hand, professionals with interdependent links to other departments within their unit are able to effect a significant decrease in the role conflict experienced by their technical staffs. From the perspective of the technicians, these professionals may be more effective at managing interdepartmental interdependencies. Professionals who report many contacts with persons in other departments within their unit also decrease role conflict for technicians. Managers who report a high number of similar contacts increase the technicians' role conflict and ambiguity.

It is possible that these interdepartmental links (whether they are interdependencies or contacts) give professionals information about what their technical staff ought to be doing, and that professionals so linked communicate this information to technicians. However, professionals whose interdependencies are extended across units seem to increase technicians' role conflict even as they decrease their role ambiguity. Professionals who have interunit interdependencies seem to communicate information or make demands which clarify roles for technicians, but conflict with demands placed upon technical staff by others, perhaps managers.

The centralization measures add further information. It appears that locating decisions at the senior engineering (professional) level as opposed to the department supervisor (managerial) level, (CENT2), reduces role ambiguity for technicians. However, when decisions are made at the department supervisor level rather than the unit chief level, technicians feel that their roles are more fair. In short, it appears that decentralization of decision making has a positive effect upon technicians. In this regard, the data are in contrast to relationships posited by

Corwin (1969) who argued that decentralization would increase the possibilities for disagreement and conflict. The positive effects reported here, however, concern role ambiguity and fairness. Centralization had no effect upon role conflict for either managers, professionals, or technicians.

Toward a More Specified Model of Role Stress

The stepwise regressions presented in Tables 2, 3, and 4 indicate that few perceptions made by subordinates were associated with their superiors' role stress. The sources of role stress for professionals were primarily perceptions by managers, while technicians' role stress was a function of both professionals' and managers' perceptions of task characteristics and organizational responses. The lack of measures from personnel above the level of department supervisor may account for the overall lack of findings concerning managers' experienced role stress.

Noting that the variables of task autonomy, supervisor goal-clarifying activities, and co-worker feedback had little or no direct effect on role stress, these variables along with subordinates' perceptions of task and organizational variables were eliminated from further analysis. This effectively eliminates further attempts to identify sources of managerial role stress. Further specification of the general model, therefore, will focus on technicians and professionals, with technicians' perceptions eliminated from models predicting professionals' role stress.

These reductions allow for analyses to determine whether task characteristics have a direct effect on role stress measures, or whether the effects observed in the stepwise regressions disappear when controls for

organizational response measures are introduced. The decreased number of independent variables also allows for an assessment of the extent to which the impact of organizational response variables may be a spurious consequence of simultaneous association with task characteristic measures.

Determinants of Professionals' Role Stress. As hypothesized in the general model, task characteristic variables were first introduced into the regression as predictors of professionals' experienced role stress. The beta's for this analysis are contained in the first column under each role stress measure in Table 5. Following the task characteristics, organizational response measures were introduced into the regression equation. The resulting beta's are presented in the second column under each role stress measure. Table 5 presents the results of the regression of professionals' role ambiguity, conflict, overload, and fairness on the task characteristic and organizational response measures listed.

Insert Table 5 about here

The forced regressions provide support for many of the findings reported from the stepwise procedure. The data in Table 5 indicate that, in general, managers' task feedback appears to have a direct effect in reducing professionals' role conflict, and in increasing their sense of role fairness. The impact of managers' task feedback on professionals' role ambiguity, however, is reduced to slightly below the point of statistical significance by the introduction of organizational response variables. Managers do not appear to be able to reduce professionals' role overload by receiving task feedback.

While workflow centrality across units retains its significant negative impact upon professionals' role conflict, workflow centrality across departments loses its significance with the inclusion of organizational response variables. Organizations may be able to respond to reduce conflicts arising out of local dependencies. Conflicts emerging from more widely distributed interdependencies may, however, be more difficult to handle. Such interdependencies may have to be managed by the professional staff with a consequent increase in role conflict.

Managers' reports of external interdependencies across departments are no longer associated with increased professional role ambiguity and inequity as appeared to be the case in the earlier analyses. Also, the impact of managers' dependencies within their own departments on role conflict is reduced to slightly above the .10 level of significance in the forced regressions. Managers who themselves exercise much influence over work activities, however, effect an increase in professionals' levels of role conflict. Managers who exercise departmental influence, can also increase professionals' experienced role overload.

Determinants of Technicians' Role Stress. The determinants of technicians' role stress reported in Table 6 reinforce several of the findings observed in the stepwise regressions. There are, however, differences. In general, task variables seem to play a greater part. While both measures of workflow centrality showed no major effects in the stepwise regressions, workflow centrality across departments now appears to increase technicians' role ambiguity, while workflow centrality across units also decreases technicians' feelings of role fairness. The impact of workflow centrality across departments on role fairness, however, does

not attain the .10 level of significance when organizational response variables are introduced. The inclusion of organizational response variables also decreases the impact of workflow centrality across departments on technicians' role conflict.

As in the stepwise regressions, professional interdependencies across departments decreases technicians' role conflict, but this impact is significantly reduced when organizational response variables are included. Unlike the findings earlier, these external interdependencies now appear to increase role overload. These coefficients, however, do not attain the .10 level of significance. This suggests, however, that professionals' external interdependencies across departments may increase their technicians' work load even as they reduce role conflict.

Consistent with earlier results, managers who become highly involved in interdependencies within their departments can increase technicians' role conflict. Organizational responses, however, reduce this impact considerably. Professionals with interdependencies across units increase conflict for technicians in their departments. The introduction of organizational responses, however, reduces this impact to less than the .10 level of significance. As with the stepwise procedures, it is as though professionals usefully manage interdependencies, but only up to a point. When they become involved in interdependencies across several organizational boundaries, technicians' stress may be increased.

Insert Table 6 about here

Organizational response variables also have a significant direct effect on technicians' experienced role stress. As with the stepwise

regressions, the degree of formalization of managers' jobs is positively associated with technicians' levels of role ambiguity, conflict, and overload. It also appears to lead to lowered perceptions of role fairness. As was the case with professionals' role stress, managers who receive feedback from their own supervisors seem to be able to reduce technicians' role ambiguity. As with the stepwise regressions, professional interdepartmental contacts seem to increase technicians' role fairness while managers' contacts increase their role overload. The latter coefficient only approaches statistical significance, but it suggests that managerial activities may increase stress for technicians, while professional activity, when confined within departments, seems to reduce stress.

DISCUSSION

As the results indicate, a variety of task characteristics and organizational response measures play an important part in determining the levels of role stress experienced by employees. Moreover, the sources of stress are quite different for employees holding different positions and performing different tasks in the organization. The results even show that what increases in role stress for one set of employees may, at the same time, decrease role stress for others. In the organization studied here, managers in departments central to the workflow reported higher levels of role fairness; professionals in those same departments reported significantly more role conflict; and technicians in central departments experienced more role ambiguity and less role fairness. By being in departments central to the workflow managers can perhaps gain additional perspective, leverage, and visibility. For their subordinates,

however, centrality can mean an increase in the number and intensity of pressures experienced on the job.

Other patterns were observed which indicate that sources of role stress are not randomly distributed across positions. The data reported here suggest that perceptions or behaviors of higher level personnel are more likely to affect their subordinates' role stress than vice-versa. While technicians were affected by perceptions at both the professional and managerial levels, professionals' feelings of stress were determined primarily by the perceptions of managers. Managers' role stress does not seem to be greatly affected by the perceptions of their subordinates, either professionals or technicians.

The relative absence of stress predictors for managers may also be a function of the "organic" nature of the organization studied and the complex nature of the tasks performed. The design tasks of this public utility require considerable horizontal communication among lower-level personnel. Many of the important decisions must be made at lower levels by those involved in and most knowledgeable about the actual work. In such organizations the burden of production rests on professional engineers and their technicians. The role of the manager may be more peripheral than in organizations which have more routine tasks and are more mechanistically structured.

Overall, the results presented here are consistent with the notion that optimal organizational responses are a function of the tasks which must be performed (Schuler, 1977). When tasks are complex and require considerable coordination at lower levels in the hierarchy, organic structures appear to reduce stress. For example, technicians' role stress

was lessened when professionals were highly interconnected across departments, but was increased when managers engaged in extradepartmental contacts. Professionals' stress was greater in departments where managers reported that they had a significant "say" in directing work activities. Stress increased for technicians in departments where managers felt their jobs were circumscribed by many formal rules and procedures. Such managerial involvement and formalization of procedures are characteristic of mechanistically rather than organically structured organizations.

In organizations engaged in complex tasks, the most functional activities for managers appear to be information processing. Managers who stay away from direct involvement in the work and who concentrate on processing information about how their group is performing and how higher management feels they are performing seem to be able to significantly decrease the role stress experience by their professional subordinates.

Additional reserach will have to be done to show that more mechanistic structures reduce stress when tasks are more routine. While Child (1973) found that formalization was positively associated with conflict, House and Rizzo (1972), investigating an organization with a more routine task than the one studied here, found that formalization reduced role ambiguity and conflict. Corwin (1969) has reported evidence supporting the view that decentralization of decision making will increase conflict. These seeminly inconsistent findings may be the result of differences in the organizational samples studied. The evidence presented here suggests that organic properties--decentralization, considerable professional level contacts and cross-departmental interdependencies, low levels of direct supervisory involvement, and considerable supervisor involvement in

information processing--decrease experienced stress. Additional research will be required to determine whether reverse relationships can be expected when more mechanistic structures are used to coordinate and control routine production processes.

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Figure 1

General Model of Relationships Among Task Characteristics, Organizational Responses, and Experienced Role Stress

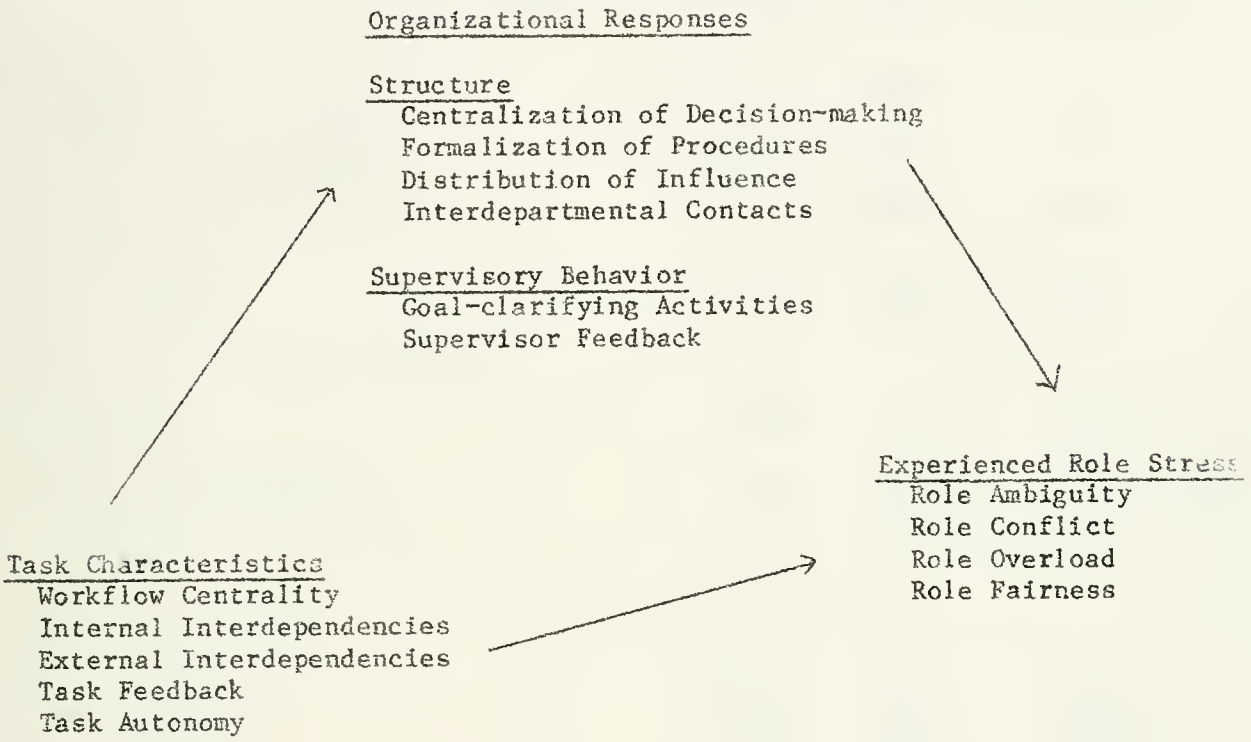

Table 1

Items per Index, Means, Standard Deviations, and Average Interitem Correlations Among Measures

Measures	Number of Items	Mean	SD	Average Interitem Correlation
Task Characteristics				
Internal Interdependence (within departments)	2	15.63	10.07	.39
External Interdependence (across departments)	2	12.18	8.92	.56
External Interdependence (across units)	2	10.91	9.42	.63
Task Feedback	3	5.34	.98	.47
Task Autonomy	2	4.46	1.35	.43
Organizational Response Measures				
Formalization	3	3.06	1.17	.51
Influence	3	3.38	.04	.65
Contacts (across depts.)	1			--
Supervisor Feedback	4	3.50	1.36	.63
Supervisor Goal-Clarifying Behavior	3	3.87	1.42	.64
Co-worker Feedback	1	3.08	1.55	--
Role Stress Measures				
Role Ambiguity	3	5.00	1.09	.44
Role Conflict	3	3.65	1.12	.25
Role Overload	2	5.30	1.09	.58
Role Fairness	2	4.10	1.41	.58

Table 2

Stepwise Regressions of Managers' Experienced Role Stress on Task Characteristics and Organizational Responses

Task Characteristics

	Professionals'							Technicians'						
Managers'	Workflow Centrality (dept.)	Workflow Centrality (unit)	Internal Interdep.	External Interdep. (across depts.)	External Interdep. (across units)	Task Feedback	Task Autonomy	Internal Interdep.	External Interdep. (across depts.)	External Interdep. (across units)	Task Feedback	Task Autonomy	R^2	$p \leq$
Ambiguity	--	--	--	--	--	--	--	--	--	--	--	--	.00	1.0
Conflict	--	--	.35	--	--	--	--	--	--	--	--	--	.13	.08
Overload	-.41	--	--	--	--	--	--	--	--	--	--	--	.17	.04
Fairness	.51	--	--	--	--	--	--	--	--	--	--	--	.26	.01

Organizational Responses

	Professionals'								Technicians'							
Managers'	CENT1	CENT2	Formalization	Influence	Contacts	Supervisor Goal Clarity	Supervisor Feedback	Co-worker Feedback	Formalization	Influence	Contacts	Supervisor Goal Clarity	Supervisor Feedback	R^2	$p \leq$
Ambiguity	--	--	--	--	--	--	--	--	--	--	--	--	--	.00	1.0
Conflict	--	--	--	--	--	--	--	--	--	--	--	--	--	.00	1.0
Overload	--	--	--	--	--	--	--	--	--	--	--	--	--	.00	1.0
Fairness	--	--	--	--	--	--	--	--	--	--	--	--	--	.00	1.0

Table 3

Stepwise Regressions of Professionals' Role Stress
on Task Characteristics and Organizational Responses

Task Characteristics

Professionals'	Managers' Workflow Centrality (dept.)	Managers' Workflow Centrality (unit)	Managers' Internal Interdep.	Managers' External Interdep. (across depts.)	Managers' External Interdep. (across units)	Managers' Task Feedback	Managers' Task Autonomy	Technicians' Internal Interdep.	Technicians' External Interdep. (across depts.)	Technicians' External Interdep. (across units)	Technicians' Task Feedback	Technicians' Task Autonomy	R^2	$p \leq$
Ambiguity	--	--	--	.37	--	-.70	--	--	--	--	--	--	.48	.01
Conflict	.40	.41	--	--	--	-.81	--	--	--	--	--	--	.47	.01
Overload	--	--	--	--	--	-.46	--	--	.44	--	--	--	.37	.01
Fairness	--	--	--	-.48	--	.55	--	--	--	--	--	--	.38	.01

Organizational Responses

Professionals'	Managers' CENT1	Managers' CENT2	Managers' Formalization	Managers' Influence	Managers' Contacts	Managers' Supervisor Goal Clarity	Managers' Supervisor Feedback	Managers' Co-worker Feedback	Technicians' Formalization	Technicians' Influence	Technicians' Contacts	Technicians' Supervisor Goal Clarity	Technicians' Supervisor Feedback	Technicians' Co-worker Feedback	R^2	$p \leq$
Ambiguity	--	--	--	--	--	--	-.35	--	--	--	--	--	--	--	.12	.04
Conflict	--	--	--	.68	--	--	--	--	--	-.38	--	--	--	--	.43	.01
Overload	--	--	--	.35	--	--	--	--	--	--	--	--	--	--	.13	.04
Fairness	--	--	--	--	--	--	.41	--	--	--	--	--	-.28	--	.22	.02

Table 4

Stepwise Regressions of Technicians' Experienced Role Stress on Task Characteristics and Organizational Responses

Task Characteristics

	Managers'							Professionals'						
Technicians'	Workflow Centrality (depts.)	Workflow Centrality (units)	Internal Interdep.	External Interdep. (across depts.)	External Interdep. (across units)	Task Feedback	Task Autonomy	Internal Interdep.	External Interdep. (across depts.)	External Interdep. (across units)	Task Feedback	Task Autonomy	R^2	$p \leq$
Ambiguity	--	--	--	--	--	--	--	--	--	-.38	--	--	.14	.08
Conflict	--	--	.51	--	--	--	--	--	-.65	.48	--	--	.45	.01
Overload	--	--	--	--	--	--	--	--	--	--	--	--	.00	1.0
Fairness	--	--	--	--	--	--	--	--	--	--	--	--	.00	1.0

Organizational Responses

	Managers'								Professionals'							
Technicians'	CENT1	CENT2	Formalization	Influence	Contacts	Supervisor Goal Clarity	Supervisor Feedback	Co-worker Feedback	Formalization	Influence	Contacts	Supervisor Goal Clarity	Supervisor Feedback	Co-worker Feedback	R^2	$p \leq$
Ambiguity	--	-.29	.52	--	.25	--	-.36	--	--	--	--	--	--	--	.43	.01
Conflict	--	--	.56	--	.29	--	--	.32	--	--	-.35	--	--	--	.56	.01
Overload	--	--	.36	--	--	--	--	--	--	--	--	--	--	--	.13	.04
Fairness	.29	--	-.37	--	--	--	--	--	--	--	--	--	--	--	.25	.01

Table 5

Determinants of Professionals' Role Strees
(N=40)

Task Characteristics	Role Ambiguity		Role Conflict		Role Overload		Role Fairness	
Workflow Centrality (across depts.)	-.01	.21	.31*	.18	.17	-.03	.02	-.14
Workflow Centrality (across units)	.12	.02	.39*	.44**	-.08	.01	-.13	-.08
External Interdependence (across depts.-mgrs.)	.02	-.02	-.11	-.01	.02	-.14	-.26	-.21
Task Feedback (mgrs.)	-.43**	-.34	-.60**	-.67**	-.26	-.25	.46**	.44**
Internal Interdependence (mgrs.)	.08	.06	.31	.30	.03	.04	-.04	-.09
Organizational Responses								
Formalization (mgrs.)		.00		.17		.18		.07
CENT1		.15		-.01		.12		.00
CENT2		.17		.01		.18		-.26
Contacts (mgrs.)		.01		-.14		.29		.05
Supervisor Feedback (mgrs.)		-.37*		.16		.24		.23
Influence (mgrs.)		.08		.48*		.38**		-.18
R^2	.16	.32	.34	.56	.08	.39	.18	.37

*p $\leq$ .10
**p $\leq$ .05

Table 6
Determinants of Technicians' Role Stress
(N=34)

	Role Ambiguity		Role Conflict		Role Overload		Role Fairness	
Task Characteristics								
Workflow Centrality (across depts.)	.48**	.47**	.39**	.20	-.04	-.18	-.37*	-.42
Workflow Centrality (across units)	.13	.15	-.18	-.08	-.15	-.10	-.34	-.45*
External Interdependence (across depts.-mgrs.)	-.12	-.06	-.14	-.05	.03	-.02	.25	.22
External Interdependence (across depts.-profs.)	-.13	.26	-.53**	-.31	.39	.63	.17	-.36
Task Feedback (mgrs.)	-.47**	-.30	-.11	-.08	.11	.28	.18	.09
Internal Interdependence (mgrs.)	-.03	-.23	.40*	.29	-.01	-.18	-.02	.10
External Interdependence (across units-profs.)	-.32	-.41	.46**	.41	-.10	-.19	.17	.33
Organizational Responses								
Formalization (mgrs.)		.52**		.41**		.48**		-.55**
CENT1		-.07		-.03		.04		.17
CENT2		-.03		-.08		-.06		-.19
Contacts (mgrs.)		.20		.15		.38		-.20
Contacts (profs.)		-.36		-.23		-.17		.47*
Supervisor Feedback (mgrs.)		-.40*		.04		-.19		.37
Influence (mgrs.)		.08		.07		.15		.16
R_2	.31	.63	.43	.62	.12	.39	.17	.49

*p ≤ .10
**p ≤ .05

Appendix 1

Questionnaire Items

Employees' interdependence with others in their department (7-point scale; 1=low, 7=high)

1. To what degree to you need information or advice from other people in your department?

2. To what degree do other people in your department need information or advice from you?

Employees' interdependence with others outside their department (7-point scale; 1=low, 7=high)

3. To what degree do you need information or advice from other departments in your unit?

4. To what degree do you need information or advice from employees in other units or divisions?

5. To what degree do people in other departments of your unit need information or advice from you?

6. To what degree do employees in other units or divisions need information or advice from you?

The extent to which the task itself provides feedback about employee performance (7-point scale; 1=not at all/strongly disagree, 7=a great deal/strongly agree)

7. As you do your job, can you tell how well you're performing?

8. I can see the results of my own work.

9. Just doing the work required by my job gives me many chances to figure out how well I am doing.

The extent to which the task allows the employee freedom and autonomy (7-point scale; 1=very little/strongly disagree, 7=very much/strongly agree)

10. How much freedom do you have to determine how you do your job?

11. There are very few things about my job that I can decide for myself (reversed).

Formalization of procedures (7-point scale; 1=not at all, 7=to a very great extent)

To what extent are there written rules or regulations which guide (each of) these activities?

12. Doing your own work

13. Scheduling your work activities

14. Changing how you do your work

The distribution of influence among employees (5-point scale; 1=no say at all, 7=a very great deal of say)

For each of the following decisions, please indicate how much say you actually have in making these decisions

15. Decisions about how work actually will be performed--the methods used, etc.

16. Decisions about what you do day-to-day

17. Decisions about changing how you do your work

Contacts (5-point scale; 1=no contact, 5=a large amount of contact)

18. How much contact do you have with people in other departments of your unit?

Frequency of supervisory goal-clarifying activities (7-point scale; 1=strongly disagree, 7=strongly agree)

My supervisor...

19. Makes it clear how I should do my job

20. Makes sure subordinates have clear goals to achieve

21. Makes sure subordinates know what has to be done

The extent to which supervisors give subordinates performance feedback (7-point scale; 1=not very often/strongly disagree, 7=very often/strongly agree)

22. How often do you find out from your supervisor how well you are doing on your job?

23. My supervisor lets me know how well I am doing.

24. My supervisor makes sure subordinates know their strengths and weaknesses.

25. My supervisor meets with me regularly to talk about how well I am doing.

Role Ambiguity (7-point scale; 1=strongly disagree, 7=strongly agree)

26. I always know what I should be doing on my job

27. It is clear what others expect of me on my job

28. Most of the time I know what I have to do on my job

Role Conflict (7-point scale; 1=strongly disagree, 7=strongly agree)

29. On my job I often have to break rules in order to get everything done

30. On my job, people ask me to do things which get in the way of my other work

31. Different people tell me to do different things

Role Overload (7-point scale; 1=strongly disagree, 7=strongly agree)

32. I have too much work to do to be able to do it well

33. I never seem to have enough time to get things done

Employees' feeling that role demands are fair (7-point scale; 1=strongly disagree, 7=strongly agree)

34. The amount of work I am expected to do in a day is fair

35. The level of performance expected of me is reasonable

Co-worker feedback (7-point scale; 1=not very often, 7=very often)

36. How often do you find out from your co-workers how well you are doing on your job?

Appendix 2

Correlations Among Measures of Task Characteristics**

Managers

Workflow Centrality (across depts.)	1						
Workflow Centrality (across units)	2	.03 (N=41)					
Internal Interdependence	3	.38* (N=41)	-.06 (N=40)				
External Interdependence (across depts.)	4	.44* (N=41)	.25 (N=40)	.60* (N=47)			
External Interdependence (across units)	5	.30* (N=41)	.30* (N=40)	.55* (N=47)	.88* (N=47)		
Task Feedback	6	.42* (N=41)	.30* (N=40)	.23 (N=47)	.40* (N=47)	.35* (N=47)	
Task Autonomy	7	.08 (N=21)	.01 (N=20)	.21 (N=25)	.18 (N=25)	.07 (N=25)	.14 (N=25)
		1	2	3	4	5	6

Professionals

Workflow Centrality (across depts.)	1						
Workflow Centrality (across units)	2	.03 (N=41)					
Internal Interdependence	3	-.37* (N=42)	-.10 (N=41)				
External Interdependence (across depts.)	4	-.06 (N=42)	.15 (N=41)	.50* (N=45)			
External Interdependence (across units)	5	.28 (N=42)	.16 (N=41)	.00 (N=45)	.59* (N=46)		
Task Feedback	6	.10 (N=42)	.03 (N=41)	-.03 (N=45)	.11 (N=45)	.36* (N=45)	
Task Autonomy	7	-.03 (N=42)	-.08 (N=41)	.08 (N=45)	.00 (N=45)	.13 (N=45)	.13 (N=45)
		1	2	3	4	5	6

Technicians

Workflow Centrality (across depts.)	1						
Workflow Centrality (across units)	2	.03 (N=41)					
Internal Interdependence	3	.02 (N=35)	-.23 (N=35)				
External Interdependence (across depts.)	4	.15 (N=35)	-.07 (N=35)	.59* (N=37)			
External Interdependence (across depts.)	5	.07 (N=35)	.03 (N=35)	.36* (N=37)	.67* (N=37)		
Task Feedback	6	-.19 (N=35)	-.13 (N=35)	-.15 (N=37)	-.27 (N=37)	-.05 (N=37)	
Task Autonomy	7	.01 (N=35)	.34* (N=35)	-.04 (N=37)	-.02 (N=37)	-.10 (N=37)	.45* (N=37)
		1	2	3	4	5	6

*$p \leq .05$

**Correlations are based upon pairwise exclusion of cases with missing data.

Appendix 3

Correlations Among Measures of Organizational Responses**

Managers

CENT1	1							
CENT 2	2	.10 (N=41)						
Formalization	3	-.14 (N=40)	-.28 (N=40)					
Influence	4	.16 (N=40)	.14 (N=40)	-.09 (N=47)				
Contacts	5	-.09 (N=40)	.13 (N=40)	-.15 (N=47)	.16 (N=47)			
Supervisor Goal Clarifying Behavior	6	.01 (N=40)	-.35* (N=40)	.24 (N=47)	.07 (N=47)	.00 (N=47)		
Supervisor Feedback	7	.05 (N=40)	-.16 (N=40)	.13 (N=47)	-.04 (N=47)	.28 (N=47)	.68* (N=47)	
Co-Worker Feedback	8	.27 (N=40)	-.20 (N=40)	-.15 (N=47)	.04 (N=47)	.26 (N=47)	.01 (N=47)	.33* (N=47)
		1	2	3	4	5	6	7

Professionals

CENT1	1							
CENT2	2	.10 (N=41)						
Formalization	3	.13 (N=41)	.03 (N=41)					
Influence	4	-.12 (N=41)	-.11 (N=41)	-.20 (N=45)				
Contacts	5	-.06 (N=41)	.32* (N=41)	-.02 (N=45)	.08 (N=45)			
Supervisor Goal Clarifying Behavior	6	.16 (N=41)	-.14 (N=41)	.02 (N=45)	.54* (N=45)	-.02 (N=45)		
Supervisor Feedback	7	.22 (N=41)	-.06 (N=41)	-.02 (N=45)	.31* (N=45)	.23 (N=45)	.58* (N=45)	
Co-Worker Feedback	8	.02 (N=41)	.03 (N=41)	.00 (N=45)	.12 (N=45)	.16 (N=45)	-.06 (N=45)	.43* (N=45)
		1	2	3	4	5	6	7

Technicians

CENT1	1							
CENT2	2	.10 (N=41)						
Formalization	3	.15 (N=34)	.13 (N=34)					
Influence	4	.17 (N=35)	.01 (N=35)	.16 (N=36)				
Contacts	5	.26 (N=35)	.07 (N=35)	.15 (N=36)	.37* (N=37)			
Supervisor Goal Clarifying Beh.	6	.41* (N=35)	-.05 (N=35)	.01 (N=36)	.24 (N=37)	.10 (N=37)		
Supervisor Feedback	7	.44* (N=35)	-.12 (N=35)	-.23 (N=36)	.12 (N=37)	.10 (N=37)	.85* (N=37)	
Co-Worker Feedback	8	.31* (N=35)	.05 (N=35)	.08 (N=36)	.12 (N=37)	.08 (N=37)	.56* (N=37)	.58* (N=37)
		1	2	3	4	5	6	7

*$p \leq .05$

**Correlations are based upon pairwise exclusion of missing data.

Appendix 4

Correlations Among Measures of Role Stress

Managers (N=47)

Role Ambiguity	1			
Role Conflict	2	.51*		
Role Overload	3	-.21	.46*	
Role Fairness	4	-.54*	-.50*	-.58*
		1	2	3

Professionals (N=45)

Role Ambiguity	1			
Role Conflict	2	.51*		
Role Overload	3	.15	.22	
Role Fairness	4	-.75*	-.39*	-.38*
		1	2	3

Technicians (N=35)

Role Ambiguity	1			
Role Conflict	2	.40*		
Role Overload	3	.02	.19	
Role Fairness	4	-.57*	-.26	-.42*
		1	2	3